

IN THE CLAIMS

The following is a complete listing of the claims, and replaces all earlier versions and listings.

1. (Currently Amended) An image forming apparatus for outputting an image based on inputted image data, said apparatus comprising:

reading means for reading an image and generating image data;

creation means for creating a correction table for correcting the density characteristics of the image data;

correction means for correcting the density characteristics of the image data from said reading means, based on the correction table created by said creation means; and

output means for outputting an image based on the image data corrected by said correction means;

wherein said creation means creates the correction table by applying a smoothing process using adjacent data whose number is determined by a range of smoothing, based on data generated by said reading means by reading plural gradient patterns outputted by said output means, and the plural gradient patterns outputted by said output means are disposed in point symmetry with respect to a center position of the image.

2. (Currently Amended) The image forming apparatus according to claim 1, wherein ~~said~~ the gradient pattern is composed of plural density patches.

3. (Currently Amended) The image forming apparatus according to claim 1, wherein said creation means determines a train of density data based on an average value of the plural brightness data obtained by ~~said~~ the plural gradient patterns and applies an interpolating process and a smoothing process to ~~said~~ the density data train, thereby ~~creating said~~ to create the correction table.

4. (Currently Amended) An image forming apparatus for outputting an image based on inputted image data, said apparatus comprising:

reading means for reading an image and generating image data;

memory means for storing plural correction tables for correcting the density characteristics of image data;

selection means for selecting a correction table suitable for correction from said memory means;

correction means for correcting the density characteristics of the image data from said reading means, based on the correction table selected by said selection means; and

output means for outputting an image based on the image data corrected by said correction means[[:]],

wherein said selection means selects the correction table based on data generated by said reading means by reading plural gradient patterns outputted by said output means, and the plural gradient patterns outputted by said output means are disposed in point symmetry with respect to a center position of the image.

5. (Currently Amended) The image forming apparatus according to claim 4, wherein ~~said~~ the gradient pattern is solely composed of a patch of a maximum density.

6. (Currently Amended) The image forming apparatus according to claim 4, wherein said selection means selects ~~said~~ the correction table according to a density value determined from the average of plural brightness data obtained by reading the maximum density patches of plural gradient patterns.

7. (Currently Amended) A control apparatus connected to an image forming apparatus capable of correcting image data generated by reading an image and outputting an image based on the corrected image data, and adapted for controlling the density correction by ~~said~~ the image forming apparatus, ~~[[the]]~~ said control apparatus comprising:

memory means for storing image data for outputting a test image;

output control means for controlling ~~said~~ the image forming apparatus so as to output a test image based on the image data stored in said memory means;

reading control means for causing ~~said~~ the image forming apparatus to read the test image outputted by said image forming apparatus, thereby ~~generating~~ to generate image data;

creation means for creating a correction table for correcting the density characteristics ~~said the~~ said image forming apparatus, by applying a smoothing process using adjacent data whose number is determined by a range of smoothing, based on image data obtained from the test image read by ~~said the~~ image forming apparatus; and

setting means for setting the correction table created by said creation means, as the correction table to be used by ~~said the~~ image forming apparatus[[:]],

wherein said memory means stores image data for outputting a test image in which plural gradient patterns are disposed in point symmetry with respect to the center position of the image.

8. (Currently Amended) A control apparatus connected to an image forming apparatus capable of correcting image data generated by reading an image and outputting an image based on the corrected image data, and adapted for controlling the density correction by ~~said the~~ image forming apparatus, [[the]] said control apparatus comprising:

first memory means for storing image data for outputting a test image;

second memory means for storing a correction table for correcting the density characteristics of ~~said the~~ image forming apparatus;

output control means for controlling ~~said the~~ image forming apparatus so as to output a test image based on the image data stored in said first memory means;

reading control means for causing ~~said~~ the image forming apparatus to read the test image outputted by said image forming apparatus, thereby ~~generating~~ to generate image data;

selection means for selecting, from said second memory means, a correction table suitable for correcting the density characteristics of said image forming apparatus, based on image data obtained from the test image read by ~~said~~ the image forming apparatus; and

setting means for setting the correction table created by said creation means, as the correction table to be used by ~~said~~ the image forming apparatus[[:]].

wherein said first memory means stores image data for outputting a test image in which plural gradient patterns are disposed in point symmetry with respect to the center position of the image.

9. (Currently Amended) A density correcting method for use in an image forming apparatus for correcting and outputting a read image, said method comprising:

a creation step of reading plural gradient patterns and creating a correction table for correcting the density characteristics of the image data by applying a smoothing process using adjacent data whose number is determined by a range of smoothing, based on the read plural gradient patterns;

a correction step of correcting the read image utilizing the correction table created in said creation step; and

an output step of outputting an image corrected ~~[[by]]~~ in said correction step~~[[;]]~~.

wherein the plural gradient patterns for ~~creaating said~~ creating the correction table are disposed in point symmetry with respect to a center position of the image.

10. (Currently Amended) The density correcting method according to claim 9, wherein ~~said the~~ the gradient pattern is composed of plural density patches.

A, 11. (Currently Amended) The density correcting method according to claim 9, wherein said generation step ~~determines~~ includes determining a train of density data based on the average of plural brightness data obtained by reading ~~said the~~ the plural gradient patterns and applies an interpolating process and a smoothing process on ~~said the~~ the density data train to create ~~said the~~ the correction table.

12. (Currently Amended) A density correcting method for use in an image forming apparatus for correcting and outputting a read image, said method comprising:

a selection step of reading plural gradient patterns and selecting a correction table for ~~correcting~~ correcting the density characteristics of image data, by applying a smoothing process using adjacent data whose number is determined by a range of smoothing, based on ~~said the~~ the read plural gradient patterns;

a correction step of correcting the read image, utilizing the correction table selected [[by]] in said selection step; and

an output step of outputting an image corrected [[by]] in said correction step~~[[;]]~~,

wherein the plural gradient patterns for selecting ~~said~~ the correction table are disposed in point symmetry with respect to a center position of the image.

13. (Currently Amended) The density correcting method according to claim 12, wherein ~~said~~ the gradient pattern is solely composed of a patch of a maximum density.

14. (Currently Amended) The density correcting method according to claim 12, wherein said selection step ~~selects said~~ includes selecting the correction table according to a density value determined from the average of plural brightness data obtained by reading the maximum density patches of plural gradient patterns.

15. (Currently Amended) A density correcting method utilizing a test chart and adapted for use in an image forming apparatus, said method comprising:

an output step of outputting a test chart; and

a detection step of detecting the condition of the image forming apparatus from ~~said~~ the test chart~~[[;]]~~,

wherein the test chart outputted in said output step is the test chart used in said detection step for detecting the condition of the image forming apparatus and is composed of plural gradient patterns which are disposed in a point symmetry with respect to a center position of the image.

16. (Currently Amended) A density correcting method for use in an image forming apparatus, utilizing a print paper on which a test image is printed, said method comprising:

a printing step of printing a test image on a print paper; and
a detection step of detecting the condition of the image forming apparatus from the test image printed on the print paper_{[[;]]},

wherein the print paper on which the test image is printed in said printing step is the print paper for detecting the condition of the image forming apparatus in said detection step, and the test image printed on the print paper is composed of plural gradient patterns which are disposed in point symmetry with respect to a center position of the print paper.